



# Commonwealth of Massachusetts

## Executive Office of Labor and Workforce Development

### Department of Labor Standards

Executive Order #511

#### **Work Zone Safety**

#### Summary of Standards and Recommendations

*This summary of standards was prepared by the Massachusetts Department of Labor Standards (“DLS”) for informational purposes and does not constitute an official interpretation by OSHA or any other agencies/entities listed as a source of standards or guidance in this document, nor an exhaustive recitation of the requirements therein. Rather, the summary is provided for the health and safety committees to assess current health and safety management of this hazard against the nationally-recognized standard. As the information provided in this document is only a summary, please consult the full standard(s) as well as any other needed sources of technical assistance for developing or improving your work zone safety program.*

*It is important to note that state workers are not covered by OSHA standards; the information generated by the health and safety committees will serve to guide the Massachusetts Employee Safety and Health Advisory Committee in identifying effective and practical strategies and policies for improving the health and safety of state workers.*

#### Technical Standard or Guideline:

Manual on Uniform Traffic Control Devices\*, (2009 edition, pending - follow when adopted, 2003 edition, current), U.S. Department of Transportation, Federal Highway Administration. Part 6, Temporary Traffic Control, contains the requirements for protection of workers in roadway work zones from passing vehicle traffic.

The goal of the temporary traffic control measures in the MUTCD are to provide passing motorists with the needed visual instructions and time to safely bypass the roadway work area. For example, signs, lights, cones, and flaggers let drivers know where and when they should be proceeding. Placing signs in advance of the work area and requiring a certain distance to create a lane shift with cones (taper length) allows drivers time to take in the change, react, and make maneuvers safely.

*\* This is the primary national or state standard/guideline for this hazard. Your agency may be following an internal standard of practice or a standard from another source for this hazard. For the gap analysis, if you are following a standard other than the primary worker protection standard listed above, please indicate which standard, if any, is being followed by your agency. If this is an internal standard of practice, please report the basis upon which the determination was made to adopt the standard.*

### Highlights of the Standard:

The MUTCD addresses the following areas:

- Temporary traffic control measures for a roadway work zone. This includes traffic control devices such as signs, cones and barrels, vehicle penetration barriers, lights, and positioning and use of flaggers. The MUTCD provides details on where all of the signs and devices should be set up based on the roadway configuration, speed limit, and type of work zone. For example the needed set up for a fixed work area at an intersection of two-lane roads will be different from the set up for a mobile tree trimming operation along a six-lane highway. Considerations for special conditions such as nighttime work or snow and ice are also included.
- Specifications for signs, lighting, traffic control devices, and barriers.
- Flagger qualifications and procedures.
- High visibility clothing.

### Other Relevant Standards:

#### 701 CMR 7.00 Use of Road Flaggers and Police Details on Public Works Projects

This regulation is designed to improve the cost efficiency of public works projects, while still maintaining safety for workers, motorists, pedestrians, and bicyclists, through the effective use of traffic control devices, road flaggers, and police details.

The primary change in past practice created by this regulation is that trained flaggers may be used in lieu of police details on low speed (speed limit less than 45 mph), roadways, as well as low volume (less than 4,000 vpd) high speed roadways.

#### OSHA 29 CFR 1926, Subpart G, Signs, Signals, and Barricades

This standard covers traffic signs, flaggers, and barricades, but basically just indicates that these should conform to the MUTCD. Note that the OSHA standard references the 1988 MUTCD which is what was in place when this standard was written, but the most current version, 2009, is what should be followed when adopted.

#### OSHA 29 CFR 1926, Subpart O, Motor Vehicles, Mechanized Equipment, Marine Operations

This standard addresses construction vehicles and equipment and covers issues such as vehicle brakes, lights, and back-up alarms. This standard is not exhaustive in its coverage of all machine types and safety equipment. It also does not address internal traffic control plans.

### *Internal Traffic Control Plans*

There is no regulation or standard requiring internal traffic control plans. However, many injuries and fatalities in work zones are not caused by passing vehicle traffic, but by vehicles and mobile equipment internal to the project. An internal traffic control plan is used to control the flow of construction vehicles, equipment and workers operating in close proximity to ensure the safety of the workers. Elements of such a plan would include things such as pedestrian-free areas, buffer spaces between pedestrians and vehicles/mobile equipment, and limited access points to the work zone. While an internal traffic control plan is not required under the MUTCD, it is strongly recommended.

A sample internal traffic control plan is listed in the web links below. An internet search for “internal traffic control plan” will bring up many other sample plans.

#### Policy:

It is recommended that the agency have as a minimum a policy to follow the Manual on Uniform Traffic Control Devices for protection of workers in roadway work zones. Note that some agencies may have adapted these standards into their own requirements, or may be using another source for work zone safety requirements. Ensure that the requirements serving as the basis of your policy are at least as protective as the MUTCD.

#### Training and Certification/Licensing Requirements:

Per the MUTCD, all workers who will be in roadway work zones should be trained on how to work next to motor vehicle traffic in a way that minimizes their vulnerability.

Per the MUTCD, Employees working as flaggers must have adequate training in safe temporary traffic control procedures as outlined in the MUTCD. This should include traffic control for one- and two-way traffic for different numbers of lanes, flagger procedures, flagger stations, safe personal positioning and proper use of hand-signaling devices such paddles (slow/stop), flags, and lights.

Any employees responsible for and/or participating in set-up and use of temporary traffic control areas should have comprehensive training in the MUTCD. This should include:

- Temporary traffic control techniques.
- Selection of the appropriate temporary traffic control configuration for the work activity and roadway type/configuration. This configuration will specify what devices to use (signs, cones, barrels, lights, jersey barriers, etc.) and exactly where to place these items in the advance warning area, the transition area, the activity area, and the termination area.
- How to install signs, other traffic control devices, barriers, lights, etc. in conformance with the selected traffic control configuration.
- Usage of all temporary traffic control devices.

- Safety during installation and removal of temporary traffic control devices such as cones.

Per the MUTCD, employees who develop temporary traffic control plans that are beyond the scope of simply referencing drawings contained in the MUTCD, from approved highway agencies, or contained in contract documents must be knowledgeable (trained and/or certified) about the fundamental principles of temporary traffic control work and work activities to be performed.

#### Engineering Controls – Requirements:

Back-up alarms on vehicles.

#### Administrative Controls – Requirements:

Development of a temporary traffic control plan.

Determination of appropriate temporary traffic control configuration is performed by trained/qualified individual.

Employee field access to a set of all of the model traffic control configurations from the MUTCD or equivalent. Commonly, this is achieved by providing employees with a laminated booklet with each page providing a picture of the appropriate traffic control configuration for that particular roadway configuration.

- If you have employees who will be working in a roadway work zone set up by another employer, it is important that these employees have the tools and training necessary so that they can make a judgement about their own safety, and take necessary action before working in an improperly set up work zone.

#### Administrative Controls – Recommendations:

An internal traffic control plan as outlined in the policy section above.

#### Equipment Controls – Requirements:

For equipment, consider the major areas listed below. The ideal is to have a “yes” answer for all of these questions.

- Do you have all of the needed types of equipment for the full range of temporary traffic control configurations?
- Do you have enough of the equipment to fulfill the requirements of all jobs, including multiple simultaneous work sites?

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- Does equipment meet required specifications?
- Is the equipment in good/functional condition?
- For situations in which the equipment is required, is it always used

**Safety Equipment**

All roadway work zones will require some traffic control equipment/devices. The details for each different roadway and work configuration is provided in the MUTCD, Part 6, Chapter 6H, Typical Applications. The specifications for each type of traffic control device are provided in the MUTCD, Part 6, Chapter 6F Temporary Traffic Control Zone Devices. This information is far too lengthy and comprehensive to provide in this document, so consult the MUTCD directly. Examples of temporary traffic control zone devices are given below.

- Traffic Warning Devices
  - Signs
  - Lights
  - Flags
  - Traffic signals
- Channeling Devices
  - Cones
  - Tubular markers
  - Drums
  - Barricades
  - Temporary raised islands
  - Pavement markings
- Crash cushions
- Vehicle arresting systems
- Rumble Strips

**Personal Protective Equipment**

The personal protective equipment (PPE) necessary in roadway work zones is high visibility clothing. (Note that if other hazards are present in a roadway work zone, appropriate PPE should be worn, for example a hard hat if overhead hazards exist.) This clothing is intended to make workers visible to motorists and identifiable as a person. Reflective clothing should make workers visible to motorists for all conditions, for example on roads of varying speed limits, during day and night work, and when the worker is standing, walking, bending, squatting, and turning sideways.

The detailed requirements for high visibility clothing are outlined in two American National Standards Institute (ANSI) Standards. ANSI/ISEA 107-2010 is the general standard. ANSI/SEA 207-2006 applies to emergency response personnel such as police officers and fire officials. The primary difference between the two standards is a lesser

amount of background fluorescent material to allow for access to guns, radios, etc. stored on the belt.

The ANSI/SEA 107-2010 standard provides the specifications for three classes of high visibility clothing, based on different amounts of fluorescent background material (colored either fluorescent yellow-green or fluorescent orange-red) and retroreflective materials (reflects light back) for each class. Color choice for fluorescent background material should be made to achieve the highest visibility, with the primary consideration being contrast against whatever background is present. The retroreflective material shall be orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 1,000 feet.

The Class level for high visibility apparel is provided on the clothing tag.

*Class 3 apparel:* should be used for the highest risk work zone activities and situations including: nighttime work, where traffic exceeds 50 mph, where there is no physical barrier between the worker and traffic, urban areas, high crash areas, flagging operations, and for set up and removal of temporary traffic control devices. Class 3 level apparel will consist of a shirt with sleeves or a vest or shirt plus pants.

*Class 2 apparel:* should be used where traffic exceeds 25 mph and for activities of lower risk.

*Class 1 apparel:* is not considered acceptable under the MUTCD for use in roadway work zones. OSHA also requires that Class 2 or Class 3 apparel be used by workers in roadway work zones per a Letter of Interpretation.

Web link to full standard or guideline and other resources:

*Informational resources identified below can also be found on our website at [www.mass.gov/dols/eo511](http://www.mass.gov/dols/eo511).*

Manual on Uniform Traffic Control Devices - MUTCD  
[http://mutcd.fhwa.dot.gov/pdfs/2009/pdf\\_index.htm](http://mutcd.fhwa.dot.gov/pdfs/2009/pdf_index.htm)

701 CMR 7.00 Massachusetts Use of Road Flaggers and Police Details on Public Works Projects Regulation  
[http://www.eot.state.ma.us/default.asp?pgid=content/police\\_detail&sid=about](http://www.eot.state.ma.us/default.asp?pgid=content/police_detail&sid=about)

OSHA Standards:

[www.osha.gov](http://www.osha.gov), select the “Regulations” tab from the top menu bar. For 1910 standards select the “General Industry” tab. For 1926 standards, select the “Construction” tab. Then, scroll down to find the standard by subpart or number.

OSHA 29 CFR 1926, Subpart O, Motor Vehicles, Mechanized Equipment, Marine Operations

Sample Internal Traffic Control Plan

<http://www.ctre.iastate.edu/pubs/midcon2005/GrahamTraffic.pdf>

Massachusetts Department of Labor Standards guidance documents, available at [www.mass.gov/dols](http://www.mass.gov/dols), select “Massachusetts Workplace Safety and Health Program” from the left-side menu, then select “Hazard Information Bulletins” for the menu of bulletins.

#408 “Street and Highway Work Zone Safety Alert”

High Visibility Safety Apparel